

What is claimed is:

1. A system to inject a secondary fluid into a primary fluid, comprising:

a fluid powered motor driven by a primary fluid stream;

a liquid additive injection pump driven by the fluid powered motor; and

an on/off switch mechanism coupled to the fluid powered motor to selectively suspend

5 operation of the fluid powered motor.

2. The system of claim 1 wherein the fluid powered motor comprises:

(a) a piston movable within a housing between upstroke and down stroke positions;

(b) a valve mechanism establishing a differential pressure within the housing to
produce movement of the piston;

10 (c) an over-center mechanism coupled to the valve mechanism to toggle the valve
mechanism between open and closed positions; and

(d) an actuating shaft coupled to the over-center mechanism, the actuating shaft
including a piston upstroke stop that causes toggling of the valve mechanism
at an upstroke position of the piston during normal reciprocating movement of
15 the piston.

3. The system of claim 2 wherein the on/off switch mechanism axially displaces the
actuating shaft relative to the housing wherein the piston upstroke stop assumes an offset
position when the on/off switch mechanism is in the "off" position such that the piston upstroke
stop can not be engaged to cause toggling of the valve mechanism when the piston reaches its
20 upstroke position.

4. The system of claim 3 wherein the on/off switch mechanism axially displaces the
actuating shaft relative to the housing wherein the piston upstroke stop assumes its normal

position when the on/off switch mechanism is in the “on” position such that the piston upstroke stop can be engaged to cause toggling of the valve mechanism when the piston reaches its upstroke position.

5. The system of claim 4 wherein the on/off switch mechanism comprises a cam mechanism

5 actuated by a handle, the cam mechanism being coupled to the actuating shaft.

6. The system of claim 1 wherein the fluid powered pump comprises a housing enclosing a differential pressure reciprocating piston assembly that includes an actuating shaft providing a piston upstroke stop during normal operation and wherein the on/off switch mechanism axially

10 displaces the actuating shaft relative to the housing such that (a) the piston upstroke stop assumes its normal position when the on/off switch mechanism is in the “on” position and can be engaged when the piston reaches its upstroke position and (b) the piston upstroke stop assumes an offset position when the on/off switch mechanism is in the “off” position and can not be engaged when the piston reaches its upstroke position.

7. The system of claim 6 wherein the on/off switch mechanism comprises a cam mechanism

15 actuated by a handle, the cam mechanism being coupled to the actuating shaft.

8. The system of claim 6 wherein the on/off switch mechanism includes visual indicia of its condition as being “off.”

9. A system to inject a secondary fluid into a primary fluid, comprising:

a fluid powered motor driven by a primary fluid stream;

20 a liquid additive injection pump driven by the fluid powered motor; and

means for selectively suspending operation of the fluid powered motor.

10. The system of claim 9 wherein the fluid powered motor comprises a housing enclosing a differential pressure reciprocating piston assembly.

11. The system of claim 10 wherein the means for selectively suspending operation of the fluid powered motor selectively precludes establishment of a differential pressure within the housing effective to produce operation of the differential pressure reciprocating piston assembly.

12. The system of claim 9 wherein the means for selectively suspending operation of the fluid powered motor provides an on/off switch mechanism.

13. The system of claim 12 wherein the on/off switch mechanism includes visual indicia of its condition as being "off."

14. A method of suspending operation of a fluid motor powered liquid additive injection pump having a housing enclosing a differential pressure reciprocating piston assembly that includes an actuating shaft providing a piston upstroke stop during normal operation, comprising the step of:

axially displacing the actuating shaft relative to the housing such that the piston upstroke stop assumes an offset position relative to its position during normal operation and cannot be engaged when the differential pressure reciprocating piston assembly reaches its upstroke position.

15. The method of claim 14 wherein the step of axially displacing the actuating shaft relative to the housing comprises rotating a handle actuated cam mechanism coupled to the actuating shaft.